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Achievement Goal Orientations: A Person-Oriented Approach

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Abstract

In this chapter, we describe the principles of a person-oriented approach to studying individual differences (and similarities), and how it can be applied to the study of students' achievement goal orientations. First, we briefly illustrate the approach, which provides a way of looking at the relative emphasis of different achievement goal orientations, thereby explicitly addressing the issue of multiple goals and their associations with important outcomes. Second, we give a comprehensive review of studies that have applied such an approach to investigating students' achievement goals. The diversity in conceptualizations, methods, and study samples in the studies complicates the interpretation of the findings, but some generalizations can nevertheless be made. Based on the review, we conclude that students with qualitatively different achievement goal orientation profiles can clearly be identified, and that the extracted profiles are rather similar across studies. Further, it seems that such profiles are relatively stable over time and meaningfully associated with learning and various educational outcomes (e.g., academic achievement, self-perceptions, well-being, task-related motivation, and performance). The review also contributes to the debate concerning the advantages of endorsing different goals. Finally, we raise some methodological concerns, discuss implications for learning, and provide suggestions for future research.

Achievement Goal Orientations: A Person-Oriented Approach

In this chapter, we will explore a way of studying motivation that focuses on the profiles of students' preferred goals and related outcomes in achievement contexts. We argue that taking into account the relative emphasis of different goals or goal orientations provides us with valuable information about individual differences in motivation and how those differences are associated with various academic and personal outcomes. This so-called person-oriented approach is well suited for the study of group and individual differences within and over time, as it is predicated on the assumption that the population is heterogeneous with respect to the patterns of variables. Variables are considered less as agents and outcomes and more as properties of individual and their environment (Laursen & Hoff, 2006). In the following, we will first briefly describe and illustrate the person-oriented approach, after which we will review a body of research that has applied such an approach to investigating students' achievement goals and goal orientations.

What Is a Person-Oriented Approach?

Often when we refer to motivation in everyday discussions, we tend to describe individuals or groups of individuals: "he was not motivated to do the task", "she has always displayed immense interest in mathematics", "the team clearly lacked confidence", and so on. Yet, in research, we are inclined to discuss about the constructs: interest seems to predict course choices, anxiety interferes with task performance, confidence contributes to achievement above and beyond intelligence. This is rather natural, since in research, we are mostly interested in the constructs that describe and refer to the psychological phenomena we believe to represent the various aspects of motivation. Most studies are designed correspondingly: we measure different types of variables and then link those variables to each other through correlations and regressions. Such an approach can be labelled as variable-oriented. Within this approach, models and hypotheses are formulated in terms of variables

and variable relations, use statistical methods that focus on variable relations, and treat variables as the main units of analysis (Bergman & Magnusson, 1997). For example, we could hypothesize that two independent facets of perfectionism (Stoeber & Otto, 2006), goal level and discrepancy (i.e., perceived dissatisfaction with goal attainment), differently predict task performance. Accordingly, we would conduct a study where we first measure participants along the two measures of perfectionism, have them then perform a task, and, finally, regress the performance scores on the measures of perfectionism. The obtained regression coefficients would thus inform us about the extent to which change in one facet independently predicts the change in task performance.

Alternatively, we could also focus more on the individuals instead of variables, and hypothesize that there are groups of individuals that are similar to each other, but differ from the others in terms of the level of the facets of perfectionism. For example, some may set high goals and be satisfied with their attainments, some may set high goals and be unsatisfied with their attainment, and yet some may set low goals and still be satisfied with their attainments. These three different groups might then also differ in their task performance. Thus, instead of examining relations among variables within a sample, we would be more interested in examining the heterogeneity of the sample across variables. In practice, we would first group the participants according to their perfectionism profiles, and then examine group differences on task performance. Through this, we would gain information about how people with different perfectionism profiles succeeded in the task. This approach can be labelled as person-oriented. Within this approach, the focus is on score profiles across the variables instead of variables as such. Models and hypotheses are formulated in terms of individuals and variable configurations, and statistical methods that focus on individuals and groups of individuals are used.

We can thus differently approach the same targets of interest with different

implications for the potential outcomes. Although there is no clear consensus on the terms variable-oriented and person-oriented (Bergman & Trost, 2006), the difference between these approaches is not just the methods used. There are theoretical implications as well that are mostly shared by the different views. The person-oriented approach is often linked to the holistic-interactionistic paradigm introduced by Magnusson (1988) and further developed by Bergman and Magnusson (1997), which views the individual as an active agent in the person-environment system. Its core tenets suggest that there is lawfulness and structure both in intra-individual constancy and change and in inter-individual differences in constancy and change, that this lawfulness and structure can be described as patterns of the involved factors, and that some patterns occur more frequently, some others less frequently than expected, based on theory (see von Eye & Bogat, 2006).

Consider, for instance, our example of perfectionism above. Perfectionistic strivings refer to individual tendencies to set high standards and simultaneously to critically evaluate personal achievements in relation to those standards. This implies that a person with extreme levels in both facets – who strives for high goals, but is seldom satisfied with the outcomes – can be considered as a perfectionist. However, as those facets of perfectionism tend to be empirically uncorrelated, people are likely to display different combinations of the two: they may be high or low in both, neither or just one of them. Indeed, empirical studies demonstrates this to be the case (Rice & Slaney, 2002).

In addition to describing similarities and differences across individuals and groups of individuals, person-oriented approach is also well suited for analyzing development and change over time. Here, the interest is more in the stability and change of the patterning of variables rather than in the stability of variables as such. For example, instead of examining stability coefficients and changes in mean levels of the facets of perfectionism, one would investigate whether the same number of groups were identified in different measurement

points, whether the identified profiles were similar over time, and the extent to which members in each group remained in the same group. The patterning of the groupings and membership frequencies could then be analyzed using cross-tabulations or configural frequency analysis (CFA; von Eye, 1990). Stability is present if similar profiles and groups are identified at the different measurement points and if members are likely to stay in similar groups over time. In contrast, qualitative shifts (i.e., changes in individuals' profiles) are present if people move from one group to another.

To summarize, in some cases, score or variable profiles may be a theoretically more appropriate and empirically more accurate way of describing certain phenomena than simple scores or variables, and the examination of score configurations may be more informative than the analyses of variable relationships. A person-oriented approach may thus provide us with a view that goes beyond mere variable relationships, and inform us more thoroughly about the similarities and differences between and within individuals and groups of individuals. However, it is important that the given theoretical stance both justifies the approach and provides substantive grounds for interpreting the results. As it is always possible to identify profiles or form groups in the data, any solutions derived from such person-oriented analyses need to be meaningful in relation to the underlying theoretical framework. Naturally, variable- and person-oriented approaches should not be taken as methodological rivals, but rather as complementary approaches with different foci (see Niemivirta, 2002a).

In the remaining parts of the chapter, we will first describe how such a person-oriented approach can be applied to the study of differences (and similarities) in how students' orient themselves to learning and performance in achievement settings, and then review a set of findings obtained from such studies.

Achievement Goals Versus Achievement Goal Orientations

As noted already in the title of this chapter, our focus is on students' achievement goal *orientations*. Thus, we explicitly differentiate between goals and goal orientations. This view follows the early work on achievement goals by Nicholls (1989) and Dweck (1992), who jointly and independently set the stage for this line of research. Such a view is also integrated into the so-called adaptive model of learning, which seeks to describe the dynamics of students' self-regulation in the context of learning and achievement (Boekaerts & Niemivirta, 2000), and thus provides the broader theoretical framework for our approach. Let us illustrate this briefly.

Classroom events are comprised of frequent unfolding episodes that focus on learning and performance – students are expected both to attain and demonstrate their competence. From the student's point of view, such repeated episodic events represent a sort of coping situations; they are packed with challenges, expectations, and demands that measure the availability and sufficiency of the student's personal resources. When students encounter such a situation, they first seek to identify and interpret the features of the situation. The resulting situational construal, which is a function of both the students' prior experiences, goals, and beliefs (i.e., "theory") and the features of the situation (i.e., "data"), then influences how the students appraise the event's subjective relevance and their personal resources to cope with it. These appraisals, in turn, result in outcomes such as emotions, motivational states, and action tendencies that set the stage for further activity.

As noted, the goals we hold partly guide our interpretations and responses to specific situations, and they may become manifested on various levels of action (Vallacher & Wegner, 1987). For example, the goal might be the action itself (e.g., the enjoyment of jogging), the outcome of the action (e.g., the euphoric feeling afterwards), or subsequent consequences (e.g., better health). The early work on achievement goals made a similar

distinction between different levels of goals as well. For Nicholls (1984), the key issue was how the students define success in achievement situations. He argued that individuals commonly define success either in a self-referenced fashion (e.g., in terms of learning something new or performing better than before) or based on normative comparison (e.g., doing better than others). Thus, when striving to increase competence in the former sense, students are said to be task-involved, and when seeking to demonstrate competence in the latter sense, they are said to be ego-involved. These particular goal states were assumed to be elicited in part as a function of the situational setting (e.g., competitive vs. individualized task instruction) and to influence differentially further task choice and attainment. Importantly, Nicholls (1989) further argued that while situationally induced conceptions of success become manifested in task- and ego-involvement, individuals also differ in their commitment to those criteria of success, and thus also in their proneness to the two types of involvement. Task-oriented individuals would be inclined to approach tasks in the self-referenced fashion, whereas ego-oriented individuals would do so in a normative fashion. The former would seek to increase their competence, whereas the latter would seek to validate their competence.

Also Dweck (1992) made a distinction between specific goals as the outcomes individuals strive for, and the more superordinate goals behind the particular outcomes individuals strive for. She further argued that the adoption of goals in achievement situations emerges as a function of individual differences and situational factors. That is, people bring to a situation certain goal tendencies, but goal tendencies can also be fostered by the situation (e.g., when it provides cues that increase the salience or value of particular goals).

Following the above, our view thus focuses on individual differences in the proneness to favor certain goals and outcomes. While more specific goals represent objects, events, states, or experiences one seeks to attain, goal orientations reflect individual differences in the preferences for certain types of desired end-states. In a sense, then, they could be seen as

knowledge structures we do not need to be constantly conscious about, but which may become activated as a function of the situation or our perception of it: the higher the accessibility, the stronger the preference and the easier it becomes activated based on the current situational setting and environmental cues (see also Pintrich, 2000).

Unfortunately, much of the empirical research has not made such a differentiation explicit, or has considered it as irrelevant (see Elliot, 1999). Yet, many studies that refer to achievement goals seem to have treated them as orientations (e.g., more generalized tendencies), either in how they have been operationalized or measured, or in how the results have been interpreted. It is thus virtually impossible to unambiguously categorize studies into ones that have focused on goals per se and ones that have focused on goal orientations. This also applies to studies conducted following the person-oriented approach, which makes it difficult to differentiate between studies where "person-orientation" refers to a theoretically and methodologically argued stance and studies that merely use person-oriented methods for analyses (e.g., clustering of participants). Due to this, we will in the following sections first look into this research as a whole, without a detailed separation of specific types of studies, and then in our concluding summaries, we will make certain differentiating aspects explicit.

Different Classes of Goals and Goal Orientations

In order to understand how achievement goals (i.e., specific goals associated with the desire to attain or demonstrate competence) and achievement goal orientations (i.e., dispositional tendencies to prefer certain types of goals and outcomes over some others in achievement-related settings) contribute to students' achievement-related responses and actions, we need to identify the kinds of goals that students are likely to endorse in achievement settings.

As mentioned above, the early research identified two types of goals that formed the grounds for later advancements: goals or goal states with a focus on increasing competence

and goals or goal states with a focus on demonstrating competence (i.e., task- and ego-involvement by Nicholls, learning and performance goals by Dweck et al., respectively). Task-involved children endorsing learning goals seemed to consider errors and setbacks as part of the learning process and tools for improvement, whereas ego-involved children endorsing performance goals seemed to perceive errors as indications of failure and, subsequently, lack of competence (Dweck & Leggett, 1988; Nicholls, 1984). Thus, the adoption of either type of goal resulted in qualitatively different cognitive and affective processes in an achievement setting.

As an educational psychologist (see Thorkildsen & Nicholls, 1998, for a discussion on the different approaches to studying achievement-related motivation and behavior), Nicholls sought to understand more comprehensively the various ways students may adjust to or cope with the demands of achievement situations, and thus also acknowledged goals that are not directly targeted at increasing or demonstrating competence, but which may still cover a substantive part of students' achievement-related behavior in the classroom. These included work avoidance (e.g., trying to avoid effort and preferring easy assignments) and academic alienation (e.g., trying to disregard rules and expectations by "goofing off" and "beating the system"), which empirically often merged into one, (work) avoidance orientation. Note that such goals have often been disregarded in contemporary research based on the argument that they rather represent the absence of an achievement goal than the presence of one (Elliot & Thrash, 2001), yet the research clearly suggests that they indeed belong to the goals students themselves identify and subscribe to in achievement contexts (Dowson & McInerney, 2001; Lemos, 1996; Pulkka & Niemivirta, 2015).

The classification of goals put forth by Dweck and Nicholls was later followed by new elaborations. Inconsistent findings associated with performance goals led to an explicit bifurcation of performance goals into approach (i.e., a desire to demonstrate competence) and

avoidance (i.e., a desire to avoid demonstrating incompetence) forms (Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997; Skaalvik, 1997). Later, the approach-avoidance distinction was also applied to mastery goals, suggesting the differentiation of mastery-approach (i.e., desire to learn) and mastery-avoidance goals (i.e., desire to avoid misunderstanding or decline in skill) dimensions (Elliot & McGregor, 2001; Pintrich, 2000). However, given the somewhat limited and inconsistent findings, the separation of mastery goals has not received unreserved agreement in the research field (see Bong, 2009).

Other developments concerning students' mastery strivings included a class of goals that on the one hand describes a desire of improving one's skills and succeed at school (like the original mastery goal), but that on the other hand grounds on extrinsic criteria (e.g., grades) for evaluating mastery (unlike the original mastery goal). Such goals have been referred to as outcome goals (Grant & Dweck, 2003) or mastery-extrinsic goals (Niemivirta, 2002b, 2004). Despite some differences in conceptual nuances, empirical findings commonly suggest that while such goals are related to some positive and adaptive patterns of coping and behaviour (e.g., commitment, effort, academic achievement) they may also induce performance-concerns (e.g., fear of failure), likely due to the more explicit instrumental criteria for mastery (Grant & Dweck, 2003; Niemivirta, 2002b; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2011).

In our own work, we have focused on five orientations – the Helsinki 5[1] – that in our view represent a comprehensive array of goals and outcomes relevant in the classroom: mastery-intrinsic, mastery-extrinsic, performance-approach, performance-avoidance, and (work) avoidance goal orientations, respectively. They refer to the expectations embedded in achievement-related contexts (i.e., to learn and to demonstrate what has been learned), the different psychological functions associated with such expectations (i.e., self-improvement,

[1] This anecdotal label for our set of orientations was proposed by prof. Mary Ainley when she served as the honorable opponent for the doctoral defense of one of the authors.

self-enhancement, and self-protection), and the overall responses to those demands (i.e., accept the expectations or detach from them). They also tap both the individual and instrumental (or lack thereof) values attached to such expectations. Importantly, however, we believe that since we all identify and acknowledge the different ways of orienting ourselves to the academic ethos – the "educational tasks set for us"– a better understanding of them and their role in relation to other educational outcomes requires the examination of their relative weight. Dweck (1996) acknowledged this differentiation and expressed it aptly when she stated that "virtually all people share the basic classes of goals.... People differ, however, in the relative emphasis they place on them and on the means they use to pursue them" (p. 353).

We may thus have a common understanding of the different goals and their meaning, but there are differences in which goals we follow or find relevant for ourselves. It is natural for any human being to experience joy in learning, to feel good about succeeding in front of the others, or to feel bad about failing in public, but the personal significance of these experiences may vary significantly. The preferences for such experiences are also likely to vary as a function of the situation, but it is still probable that we exhibit tendencies to prefer some experiences over some others. That is, we are oriented towards the environment in specific contexts in idiosyncratic ways, which makes certain interpretations of and responses to the situation more likely than others. The patterning of these orientations thus serves as a motivational lens through which we view the situations, and becomes manifested in our goal and outcome preferences. In the following we will explore the patterning of such tendencies.

Types of Achievement Goal Orientation Profiles

Methodologically, different approaches have been used to study the effects of multiple goals on educational outcomes that do not fully qualify as examples of a person-oriented approach. These would include studies looking at the interaction effects of goals through multiple regressions (e.g., Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997;

Kaplan & Midgley, 1997) and studies classifying participants using median splits (e.g., Pintrich, 2000). The latter approach does indeed produce groups, but the number of groups is arbitrary in the sense that any continuous variable can be split into two based on the median, and, thus, the resulting classification does not represent the "true" empirical clustering of cases within a sample. Conventional cluster analysis is already a more sophisticated technique, although this common procedure is prone to bias because of the problems in determining the number of clusters (Pastor, Barron, Miller, & Davis, 2007). More recent studies have used model-based approaches such as latent class clustering and latent profile analysis, which have several advantages over the traditional methods, including statistical criteria for determining the appropriate number of classes (Nylund, Asparouhov, & Muthén, 2007).

Types of Profiles

Studies examining students' achievement goals from a person-oriented approach (see Appendix for a comprehensive summary of these studies) started to appear in the 1990s, and their number has been constantly increasing (see Table 1). The review of the literature reveals that different conceptualizations, different analytical methods, as well as participants of different ages and from various educational contexts make the interpretation and generalization of the results challenging (see also Wormington & Linnenbrink-Garcia, 2016). Regarding methodology, 16 % of the reviewed studies employed median split procedures, slightly over half used cluster analysis, and about one third utilized model-based techniques (see Table 1). With respect to the participants, approximately one third of the reviewed studies included university students, nearly as many studies examined middle or lower secondary school students, and slightly fewer studies included elementary and high school students (see Table 2).

[Insert Table 1 here]

In the early work on goal profiles, researchers differentiated mainly between mastery and performance goals and used these two for clustering the students (this was the case in 11 % of the reviewed studies) but, later, the trichotomous (i.e., mastery, performance-approach, and performance-avoidance) model (Elliot & Harackiewicz, 1996) gained popularity (30 % of the reviewed studies). The 2 x 2 goal model (Elliot & McGregor, 2001), a common framework within the variable-oriented studies, has been utilized in 8 % of the reviewed person-oriented studies, while the 3 x 2 goal model (Elliot, Murayama, & Pekrun, 2011) has been used in only one person-oriented study.

Work-avoidance goals were included, with different kinds of combinations of other goals, altogether in one third of the studies: along with mastery and performance goals in 11 %, along with mastery, performance-approach, and performance-avoidance goals in 6 %, and as part of the Helsinki 5 (Niemivirta, 2002b) in 14 % of the reviewed studies, respectively. Some studies have included other goals as well, such as social goals, and they have been used as clustering variables along with academic goals in 16 % of the reviewed studies (Gonçalves, Niemivirta, & Lemos, 2017; Korpershoek, Kuyper, & van der Werf, 2015; Litalien, Morin, & McInerney, 2017; Valle et al., 2003).

Naturally, both conceptual revisions and more eclectic approaches have led to an increased complexity in the possible goal combinations, which adds to the difficulty of comparing classification solutions and the resulting profiles across the studies. Some generalizations can nevertheless be made. When exploring multiple goals, determining the number of distinct profiles becomes an essential issue. In most cases (see Appendix), the number of identified profiles has varied between three and six, with the vast majority of studies including three or four profiles (see Table 2).

[Insert Table 2 here]

Certain profiles seem to be rather common across studies, almost irrespective of the

age of the participants or their level of schooling. These would include a predominantly mastery goal profile (e.g., learning-oriented, mastery-oriented, task oriented) with relatively low values on any type of performance goal (Niemivirta, 2002b; Peixoto et al., 2016; Schwinger, Steinmayr, & Spinath, 2016; Tapola, Jaakkola, & Niemivirta, 2014), a predominantly performance goal profile (e.g., low-mastery/high-performance, performance-oriented) (Gonçalves et al., 2017; Pintrich, 2000; Tapola & Niemivirta, 2008; Valle et al., 2003), and a combined mastery and performance-approach goal profile (e.g., multiple goals cluster, success-oriented, approach group) (Daniels et al., 2008; Luo, Paris, Hogan, & Luo, 2011; Pulkka & Niemivirta, 2013a; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2008; Turner, Thorpe, & Meyer, 1998). In addition, profiles with moderate (e.g., moderate multiple goals, indifferent) (Jansen in de Wal, Hornstra, Prins, Peetsma, & Van der Veen, 2016; Pulkka & Niemivirta, 2013b; Schwinger et al., 2016; Tuominen-Soini et al., 2011) and low levels of achievement goals (e.g., low-mastery/low-performance, low-motivation, disengaged, disaffected) (Conley, 2012; Daniels et al., 2008; Gonçalves et al., 2017; Liu, Wang, Tan, Ee, & Koh, 2009; Pintrich, 2000; Tuominen-Soini et al., 2008) have often been found. Finally, studies including a work-avoidance orientation have usually found a work-avoidant profile (e.g., avoidance-oriented, work-avoidance group) with relatively low values on mastery and performance goal orientations (Kolić-Vehovec, Rončević, & Bajšanski, 2008; Ng, 2009; Niemivirta, 2002b; Tapola & Niemivirta, 2008; Veermans & Tapola, 2004).

The number and types of goal profiles extracted naturally depend on the types of achievement goals taken into consideration and the method used for extracting the different profiles, but nevertheless it seems rather clear, that certain combinations of achievement goals are common, and that they represent differences in how students orient towards achievement settings. The next questions are: how stable are these profiles, and how do they contribute to learning and other educational outcomes?

Stability of Profiles

Although the person-oriented approach to studying achievement goal orientations has become more popular, as yet only a few studies have investigated the stability and change in goal orientation profiles. The existing findings are rather mixed, implicating to the variations by study samples and choices of methods. Some studies show that among young elementary school students, only about one-third of the students or even less hold the same profile over the school years (Schwinger & Wild, 2012; Schwinger et al., 2016; Veermans & Tapola, 2004), while some others suggest that as many as 80 % of students display stable profiles from fifth to sixth grade (Jansen in de Wal et al., 2016) or 75 % across the transition from elementary to lower secondary school (Tuominen, Niemivirta, Lonka, & Salmela-Aro, 2017). In secondary and higher education, the proportion of students displaying identical profiles within and between academic years has varied from 60 to 75 % (Lee, Wormington, Linnenbrink-Garcia, & Roseth, 2017; Pulkka & Niemivirta, 2013a; Tuominen-Soini et al., 2011), and half of the students have shown profile stability even across an educational transition from lower to upper secondary school (Tuominen-Soini, Salmela-Aro, & Niemivirta, 2012).

Note, also, that although some students do show a change in their motivational profile over time, the majority of them seem to move to a neighboring group with fairly similar profile (e.g., from mastery- to success-oriented), and substantial qualitative shifts (e.g., from mastery- to avoidance-oriented) are rare (Gonçalves et al., 2017; Pulkka & Niemivirta, 2013a; Tuominen-Soini et al., 2011, 2012). We can thus conclude that stability in goal orientation profiles is more frequent than significant changes, even across educational transitions (Gonçalves et al., 2017; Tuominen et al., 2017; Tuominen-Soini et al., 2012).

Although part of the changes detected in different studies are “genuine” in the sense that they reflect true changes either in the individual or in their relations with the surrounding

world – for instance, maturation, changes in calibrating one's competence perceptions, transitions to new educational contexts, changing social environment, and identity development – the instability observed in some studies are more likely due to the methodology. For example, all the studies displaying low stability have classified students according to their goal profiles separately at different time points, thus ignoring the dependence of the measures across time points, while the studies exhibiting higher stability have taken this non-independence explicitly into account. One must thus exercise caution when interpreting the findings and drawing inferences from them. Nevertheless, it does not seem premature to conclude that students' achievement goal orientation profiles do not randomly fluctuate, but rather seem relatively stable over time. This supports our view of such profiles as tendencies to view and approach achievement settings in particular ways. If this is the case, different achievement goal profiles should also influence students' achievement-related activities and experiences, and thus contribute to various educational outcomes. We will review such findings next.

Achievement Goal Orientation Profiles and Educational Outcomes

We have examined in a series of our studies what kinds of achievement goal orientation profiles can be identified among students of different age and how those profiles are associated with various educationally relevant outcomes. Using the Helsinki 5 model and robust model-based classification methods, we have found considerable consistency in the profiles across studies and various academic contexts (i.e., elementary, secondary, and higher education). Usually we have found groups with a dominant tendency towards mastery (mastery-oriented students), performance (success-oriented and/or performance-oriented students), and avoidance (avoidance-oriented) as well as a group of students without a dominant tendency towards any specific achievement goal orientation (indifferent students). Mastery-oriented and success-oriented students both emphasize learning and achievement,

but success-oriented students are also likely to endorse performance-related goals. Indifferent students represent a "typical" student who seeks to do what is expected (to learn and perform well), but also tries to minimize the required effort. Compared to the others, avoidance-oriented students display lower mastery aspirations and aim more at minimizing the effort and time spent on studying.

In the following sections, we will first describe findings from our own studies following the above scheme, after which we will reflect on other studies on similar themes and draw some general conclusions.

Profile Differences in Relation to Motivation

Using a nationally representative sample of folk high school students we investigated how groups of students with different achievement goal orientation profiles differ with respect to task-specific motivation (i.e., situational interest, self-efficacy, and claimed self-handicapping) during a problem-solving task (Niemivirta, Pulkka, Tapola, & Tuominen-Soini, 2013). The groups differed in terms of how they interpreted, experienced, and approached learning and performance situations. Compared to the others, mastery- and success-oriented students anticipated the task to be more interesting and reported higher self-efficacy, whereas students emphasizing performance-related orientations claimed more self-handicaps. Students' task-specific motivation partly mediated the effects of achievement goal orientations on performance: mastery- and success-oriented students' confidence in their own abilities seemed to support their task engagement.

Similarly, other studies have demonstrated support for the merits of high mastery (i.e., a dominant mastery goal) and high approach goals (i.e., a combination of mastery and performance-approach goals) profiles in terms of motivational outcomes (see Table 3 for an overview of the commonly found goal profiles and how they are linked to various outcomes). Mastery-oriented students seem to express high overall level of motivation, such as high self-

efficacy, intrinsic motivation, value of studying, and perceived ability (Kolić-Vehovec et al., 2008; Schwinger et al., 2016; Tuominen-Soini et al., 2012). Similarly, success-oriented students, or students striving for both mastery and performance, also show high intrinsic motivation, commitment, self-efficacy, and task value (Korpershoek et al., 2015; Luo et al., 2011; Schwinger et al., 2016), but they are more likely to attribute learning and success to fixed abilities (Gonçalves et al., 2017; Tapola & Niemivirta, 2008) and they express higher concerns for failure (Tuominen-Soini et al., 2011). Both of these groups of students nevertheless demonstrate higher persistence and effort, and report using more effective learning strategies than the others (Niemivirta, 1998; Tuominen-Soini et al., 2008; Valle et al., 2003). Compared to the above groups, students with a relative emphasis on performance goals, particularly when performance-approach goals are coupled with performance-avoidance goals, seem to exhibit less positive patterns of motivation, such as academic withdrawal, low self-esteem, and inferior effort regulation (Luo et al., 2011; Tapola & Niemivirta, 2008). Also students with moderate or low goal profiles display rather unfavorable patterns of motivational beliefs, such as low agency beliefs, high academic withdrawal, high fear of failure, and a dysfunctional attributional profile (Gonçalves et al., 2017; Tuominen-Soini et al., 2011), although it is the avoidance-oriented students that systematically show the most maladaptive patterns of motivation – relatively low valuing of school, low effort, and high academic withdrawal (Kolić-Vehovec et al., 2008; Niemivirta, 1998; Tapola & Niemivirta, 2008; Tuominen-Soini et al., 2011).

Profile Differences in Relation to Achievement

Regarding learning and achievement, there has been some debate over the relative benefits of holding mastery vs. performance-approach goals (Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002; Kaplan & Middleton, 2002; Senko, Hulleman, & Harackiewicz, 2011). It would seem that surprisingly often the adoption of performance goals contributes to

better academic achievement than a focus on mastery, although this appears to depend on both the sample in question (e.g., age and educational context) and the criteria used for achievement. From the person-oriented approach it is of particular interest to see whether taking into account the different combinations of goals could shed some light into this debate.

In one of our studies, we investigated how lower secondary school students with distinct achievement goal orientation profiles differed in terms of academic achievement, and found that both mastery- and success-oriented students performed equally well in school (Tuominen-Soini et al., 2011). The indifferent students' academic achievement was relatively inferior, but they still fared better than the avoidance-oriented students. Interestingly, similar differences were detected among the upper secondary school students, but with one distinction: here success-oriented students' achievement was even higher than that of the mastery-oriented students. Considering the fact that the academic track of our upper secondary school is considerably selective and rather performance-focused by nature, this difference might implicate to a contextual effect.

On the whole, regarding the contribution of achievement goal orientation profiles on achievement in general, and the relative benefits of mastery versus performance strivings in particular, the findings seem threefold. Studies have demonstrated that, first, mastery-oriented students display the highest academic achievement (Gonçalves et al., 2017; Meece & Holt, 1993; Schwinger & Wild, 2012); second, that students emphasizing both mastery and performance-approach goals attain the best grades (Pastor et al., 2007; Tuominen-Soini et al., 2008) and; third, that these two groups perform equally well in school (Daniels et al., 2008; Pintrich, 2000; Tanaka, 2007). It seems that striving primarily for mastery is especially beneficial in terms of achievement among young students in the elementary school context (Meece & Holt, 1993; Schwinger et al., 2016; Zhang, Watermann, & Daniel, 2016), while emphasizing both mastery and performance (e.g., high multiple goals or success-oriented

profile) might be most profitable in educational contexts that are relatively selective or performance-focused and competitive, such as the academic track of upper secondary school or higher education (Tuominen-Soini et al., 2011). In turn, students with predominantly performance-oriented, moderate, or low goal profiles generally receive lower grades than the two above-mentioned groups (Conley, 2012; Gonçalves et al., 2017; Pastor et al., 2007; Tuominen-Soini et al., 2008; Valle et al., 2003), followed by the avoidance-oriented students, who rather systematically display the lowest levels of academic achievement and performance (Niemivirta, 1998; Niemivirta et al., 2013; Tuominen-Soini et al., 2008). Note, however, that some studies have not found notable differences in academic achievement (Korpershoek et al., 2015; Schwinger et al., 2016; Tapola et al., 2014), particularly when the focus was on a specific task performance (Niemivirta, 2002b; Niemivirta et al., 2013; Tapola et al., 2014).

Thus, is seems that the emphasis on mastery is consistently beneficial when it comes to school achievement, although its coupling with performance goals might be particularly favorable in certain contexts. Then again, this effect does not necessarily extend to specific task performances. In fact, if students' mastery tendencies and task characteristics do not match (e.g., the task seems irrelevant for learning or focuses on trivialities), such tendencies may even turn out to be counterproductive (Pulkka & Niemivirta, 2015; see also Senko, Hama, & Belmonte, 2013).

To some extent, then, this goes against some of the conclusions drawn from the findings of variable-oriented studies (see above). That is, a dominant emphasis on performance does not seem to have any advantage over mastery tendencies. Considering the fact that in some contexts striving for performance along with mastery might result in added value, it is of importance to deliberate these observations with our findings concerning students' well-being. If the focus on performance implicates ability concerns and entails the

urge to validate one's competence, such strivings might not come without consequences.

Profile Differences in Relation to Well-Being

In our studies, both mastery- and success-oriented students have shown to be highly engaged in studying and finding their schoolwork meaningful, although success-oriented students' stronger concerns with performance seem to make them more vulnerable to emotional distress and school burnout (Tuominen-Soini et al., 2008, 2012). For some students, achievement may come with a price. That is, strivings for performance and success may, even in the presence of striving for mastery, entail some unfavourable concomitants; being rather stressed and emotionally exhausted and feeling inadequate as a student. Compared to mastery- and success-oriented students, the indifferent students report relatively low school value and engagement. However, despite not thriving in school, they do not seem to have any particular problems either. In stark contrast to mastery-oriented students, avoidance-oriented students are characterized by relatively low levels of school value and engagement, and high level of cynicism towards school.

Findings of other studies are in line with this example, lending once again support for the adaptiveness of high mastery and combined mastery and performance-approach goal profiles (see Table 3). Mastery-oriented students tend to exhibit an adaptive pattern of adjustment and well-being, such as positive self-perceptions, high engagement and enjoyment, and low negative affect (Daniels et al., 2008; Tapola & Niemivirta, 2008; Tuominen-Soini et al., 2012; Turner et al., 1998). Students simultaneously emphasizing mastery and performance have shown to value studying and be engaged in school and committed to their educational goals, but, also, to experience anxiety, stress, and even depressive symptoms somewhat more than their mastery-oriented peers (Daniels et al., 2008; Luo et al., 2011; Pintrich, 2000; Tuominen-Soini et al., 2008).

The profile in which performance goals are mainly emphasized, especially if

performance-avoidance goals are high, seems to contribute to less positive emotional outcomes, such as anxiety and negative affect (Luo et al., 2011; Pintrich, 2000; Tapola & Niemivirta, 2008; Valle et al., 2015). However, holding a dominant performance-approach goal orientation is associated with more adaptive outcomes than not emphasizing any achievement goal orientation; students with low goal profile display less adaptive patterns of motivation and learning (Bouffard, Boisvert, Vezeau, & Larouche, 1995; Daniels et al., 2008; Liu et al., 2009). Students displaying moderate achievement goal profiles express passivity and lack of engagement to some degree but, based on their manifest levels of well-being, they do not seem to experience serious psychological distress (Tuominen-Soini et al., 2011). Finally, students emphasizing mainly avoidance tendencies manifest the most negative outcomes in terms of emotion and well-being, such as, adjustment problems, cynicism, depressive symptoms, low school value, and low school engagement (Kolić-Vehovec et al., 2008; Niemivirta, 2002b; Tuominen-Soini et al., 2008, 2012).

Profile Differences in Relation to the Perceptions of the Learning Environment

Student motivation should not only be seen as an educational outcome, but also as a mediator that filters the influence of the learning environment on the student. That is, if achievement goal orientation profiles represent a motivational lens through which the students interpret the events embedded in the academic context, it is also likely that students' perceptions of the learning environment and instructional practices vary as a function of their goal orientation profiles. Based on our studies, this also seems to be the case. In a series of studies on university students (Pulkka & Niemivirta, 2013a, 2013b, 2015), we found that students with predominantly mastery or combined mastery-performance profile reported experiencing the courses more interesting, were more satisfied with the course in general, reported investing more effort into their studying and active participation, and gave the most positive evaluations of the quality of pedagogical materials, teaching methods, and

assessment methods, when compared to low goal or avoidance-oriented groups.

When examining how differently oriented elementary school students perceived their learning environment and what sort of instructional practices they preferred (Tapola & Niemivirta, 2008), we found that students emphasizing predominantly mastery and students emphasizing both mastery and performance goals perceived their classroom as relatively more learning-focused than those high in either performance or work-avoidance goals, who, in turn, viewed their classroom as providing less variety in task structure (e.g., possibilities for alternative task formats and activities). Similar patterns of differences were also found with respect to preferences. While performance-oriented students preferred public evaluation practices more than the other groups did, avoidance-oriented students showed the least interest in challenging and task-focused classroom work.

Other studies investigating similar issues seem to echo our findings. Compared to the others, mastery-oriented and mastery-performance oriented students seem to perceive their classroom as cooperative and meaningful (Koul, Roy, & Lerdpornkulrat, 2012), and tend to evaluate teaching, evaluation, clarity of goals, and appropriateness of the workload more positively (Cano & Berben, 2009). This suggests that mastery-focused students not only have had more positive experiences during the classes or courses, but also that they generally take a more positive stance on achievement situations. In a sense, then, these findings agree with the model of adaptive learning (Boekaerts & Niemivirta, 2000) in that in principle similar conditions and pedagogical settings may be viewed and experienced differently depending on the students' motivational lenses, and that the perceived match contributes to students' evaluations.

Profile Differences in Task-Related Motivation and Performance as a Function of Situation

In previous examples, we have looked at how students with different achievement

goal orientation profiles experience their learning environment and how they differ in terms of achievement or task performance. However, only a few studies have examined the interaction of those, that is, how students' task-related motivation and performance vary as a function of their achievement goal orientation under different task situations or pedagogical conditions. After all, one important assumption of this approach is that specific situations may differently contribute to the responses of students with dissimilar achievement goal orientation profiles.

In one study, we found that students' situational appraisals in different task conditions varied as a function of their goal orientation profiles (Niemivirta, 2002b). For example, in an 'ego-involving condition' with an emphasis on normative performance, both performance- and avoidance-oriented students reported using self-handicapping strategies more often than mastery-oriented students did, while no differences were found in the 'task-involving condition' emphasizing exploration and learning. Moreover, while the context moderated performance- and avoidance-oriented students' self-efficacy (i.e., their self-efficacy was lower in the ego-involving condition), it did not influence mastery-oriented students' self-efficacy, which may be taken as an indication of the adaptiveness of the focus on mastery. Interestingly, though, no such interaction effects were found in relation to actual task performance.

In another study examining changes in students' task-related interest under two instructional conditions (i.e., science simulation with either abstract or concrete task elements), we found that irrespective of the condition, both the overall level and change in situational interest were somewhat different for students with different goal orientation profiles (Tapola et al., 2014). On average, mastery-oriented students reported slight but steady increase in their situational interest toward the end of the task, while for success-oriented students, the change was steadily decreasing. In contrast, avoidance-oriented

students' situational interest was lowest and relatively stable in both conditions. However, the patterns of changes characterizing each goal orientation group were somewhat more evident in the abstract condition, thus supporting the assumption of the interaction between achievement goal orientation group and task condition.

It thus seems that while students striving for mastery and students striving for performance goals may both show equal task performance and affect in ordinary task situations (Tanaka, 2007), students emphasizing mastery might be more likely to maintain positive self-perceptions (e.g., self-efficacy) and affect (e.g., high situational interest, low anxiety) in demanding task conditions involving complex tasks or performance pressure, for example. In a sense, these results could be taken to support the view that students' situational appraisals and reactions parallel their achievement goal orientation profiles, and that they may partly follow from the efforts to adapt to the psychological demands of the situation, as experienced by the student.

[Insert Table 3 here]

Concluding Thoughts

In this chapter, we have described the principles of a person-oriented approach to studying individual differences (and similarities), and how it can be applied to the study of students' achievement goal orientations. Such an approach in the present context is theoretically justified by the argument that students, through experiences and in interaction with their environment, develop a motivational mindset that reflects their approach and orientation towards achievement settings. This mindset, then, becomes manifested in the students' achievement goal orientation profiles, that is, the patterning of goals and related outcomes they prefer and strive for.

Studies following this line of logic and rationale have been increasing in number in recent years, and although they may differ to some extent in whether their study design is

theory-driven or whether they just apply person-oriented methods (e.g., classify participants using cluster analysis), the overall findings in terms of the different profiles identified seem rather robust. Students with qualitatively different profiles are clearly identified. Some students emphasize mastery, some performance, some avoidance, and some different combinations of these. Such profiles also seem relatively stable, thus lending support for conceptualizing them as dispositional characteristics. This does not, however, imply that they should be taken as fixed entities, but rather as generalizations that set the stage for new experiences, and that contribute to students' responses somewhat differently depending on the context.

The person-oriented approach provides a way of looking at the relative emphasis of different achievement goal orientations, thereby explicitly addressing the issue of multiple goals and their associations with important outcomes (see Table 3). The present review thus provides insight into "which orientation is good for what" and contributes to the debate concerning the advantages of endorsing different goals. For example, the findings suggest that students' tendency to validate and demonstrate their personal qualities may be associated with some desired educational outcomes such as engagement, valuing of school, and academic achievement, but it may also be linked to some adjustment problems and socio-emotional vulnerability, even when such performance-focused goals and outcomes are pursued along with mastery-focused goals.

The findings have also implications for learning. For example, it would seem that goal configurations or goal orientation profiles partly contribute to where the learner's mental energy and focus are directed at in achievement-related situations: whether the focus is mainly on the task itself (mastery) or on its outcomes (performance). In the mastery mode, the 'state of being involved' is important and rewarding in its own right, while the performance mode is instrumental in the aim of excelling or demonstrating one's superiority

over others. Depending on the emphasis given to different goals and outcomes, then, students would seem to be inclined to engage under very different psychological mindsets: while emphasis on mastery seems to facilitate concentration and commitment to learning, emphasis on performance is more likely accompanied with greater emotional vulnerability due to concerns with proving one's adequacy. Then again, if the student considered those consequences immaterial, she might completely detach herself from the task (avoidance). This, in turn, would likely depend on whether the disengagement was due to a complete lack of interest and personal relevance (alienation) or due to repeated exposure to emotionally negative and discouraging learning experiences (self-protective withdrawal). The validity of this assumption, however, remains an open question, as current research informs us rather little about the different reasons for disengagement and avoidance.

The diversity in conceptualizations and operationalizations, analyses used, and the characteristics of the participants naturally complicates the interpretation and generalization of the results, but also the approach itself (i.e., classification and the use of resulting groups in drawing inferences about motivational differences) brings about the risks of oversimplifying the underlying phenomena and misunderstanding the nature of the findings and their implications. From the theoretical point of view, we have already cautioned the reader to not consider achievement goal orientation profiles as fixed entities or trait-like characteristics, and similar awareness should also be extended to what commonly follows from the employed methodology. For example, the types of profiles extracted depend on the classification method applied, type of measures used, and sets of orientations included in the analysis. Already the criteria for deciding the most appropriate or valid number of groups may make a crucial difference, and even if model-based techniques accompanied by specific statistical criteria were used, the choice of the final solution always involves some degree of subjective decision-making. Similarly, the interpretation of profiles and labeling them accordingly are

subjected to alike judgment. The labels are often formulated to reflect substantively meaningful variation in both the absolute level and relative emphasis of different orientations. This is not, however, meant to be categorical in the sense that all the individuals in the given group were ”of this kind”, but should rather be understood as a descriptive and pragmatic way of illustrating some core features of each group in comparison to others. For example, for a group to be labelled as avoidance-oriented, the absolute level of work avoidance would not need to be extremely high, if the relative level was high compared to both the other orientations within the group and the level of work avoidance in other groups. It might thus be the one distinguishing feature of the group, which would then become salient through corresponding labeling. Both researchers and readers should thus bear this in mind and exercise caution when looking into the findings.

This also has important practical implications. Considering the extensive and rather systematic findings on the different motivational profiles and how they are linked to learning, achievement and well-being, it would clearly be of relevance if teachers and educators were able to identify such tendencies in students. However, this should not lead to stigmatizing the students with corresponding labels, and thus treating them as groups of individuals having invariable motivational mindsets with different normative values attached to them. As research shows, despite the observed stability of different profiles, the context does matter. Certain tendencies do not result in similar responses in all situations, and the emphasis of different orientations may change as a function of the context. The key question from the educators’ perspective would then be how to structure the environment so that it provided the most optimal fit with all different tendencies. A failure safe and supportive environment would likely benefit all students, but certain procedures and activities might also be of particular relevance for some students. Mastery-oriented students might appreciate facilitation and cultivation of personal interests, performance-oriented students might value

challenging tasks yet with minimal emphasis on social comparison, and avoidance-oriented students might become more engaged through meaningful and personalized tasks. Although this conclusion is yet without unambiguous evidence, it would seem that pedagogical practices focusing on mastery are advantageous for all students, with given individual differences additionally addressed through personification. Naturally, this is a very challenging task, particularly since we know that also pedagogical delivery itself is subjected to students' interpretations, due to which future research should address more thoroughly what sort of practices were the most beneficial, for whom, and under what conditions.

In this chapter, we have provided a rather comprehensive review of the studies investigating students' achievement goals and goal orientations from a person-oriented perspective. Despite the growing interest in this line of research, many open questions remain, thereby providing suggestions for future research. Longitudinal designs would be valuable in order to provide more insight into both the stability and fluctuation of motivational profiles over time and their long-term adaptiveness in relation to different academic (e.g., learning and achievement) and personal (e.g., well-being and aspirations) outcomes. More research is also needed on how individual goal configurations are manifested in specific learning situations and under different conditions (e.g., high vs. low stakes tasks, tasks varying in personal relevance or utility). Similarly important would be to more precisely take into account the role of other personal factors (e.g., temperament) and the situation (e.g., fluctuations in motivational states) as well as their interaction in producing different responses and learning outcomes, both during tasks and over time. Finally, developmental studies should also be implemented that looked at the early antecedents and sources of different tendencies (e.g., parenting) as well as their influence on the development of other motivational factors (e.g., interests and competence perceptions). Although the above suggestions imply rather complex and demanding study designs, we are confident that

complementing those with a person-oriented approach would provide us with some added value in addressing the likely heterogeneity in situational dynamics and developmental trajectories.

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Table 1

Summary of The Classification Methods Used in The Reviewed Studies

Method	Year of publishing						
	1991–1995	1996–2000	2001–2005	2006–2010	2010–2015	2016–	Total
Median split	2	2	3	3	1		11
Cluster analysis	2	3	5	13	10	3	36
Model-based			1	3	11	8	23
Total	4	5	9	19	22	11	70

Note. Total = Total *N* of studies. The study of Lau and Roeser (2008) using inverse factor analysis is excluded from this table.

Table 2.

Summary of the Level of Schooling and the Number of Profiles Extracted in the Reviewed Studies.

	Number of profiles						
School level	2	3	4	5	6	7-	Total
Elementary/primary school		9	5	1			15
Middle/lower secondary/junior high school		4	8	1	4	2	19
High/upper secondary/vocational school	1		6	2	3	1	13
College/university/adult students	1	6	11	1	1	1	21
Total	2	19	30	5	8	4	68

Note. Studies using median split procedures are excluded from this table. Some studies included several samples or educational contexts and they are classified into several cells accordingly.

Table 3

Summary of The Most Commonly Identified Achievement Goal Profiles, Their Characteristics, and Associations with Academic and Emotional Outcomes

	Predominantly mastery	Predominantly performance	Combined mastery and performance	Average	Low	Work-avoidant
Characteristics of the profile	High mastery, low other goals (e.g., mastery-oriented)	High performance, low mastery (e.g., performance-oriented)	High mastery and high performance-approach (e.g., success-oriented)	Moderate all goals (e.g., indifferent)	Low mastery and low performance (e.g., low motivation, disengaged)	High work avoidance, low other goals (e.g., avoidance-oriented)
Motivation	High self-efficacy High intrinsic motivation Commitment and effort in relation to educational goals	Relatively low self-efficacy High fear of failure	High self-efficacy High intrinsic motivation Commitment and effort in relation to educational goals High fear of failure	High academic withdrawal and fear of failure	Low self-efficacy Relatively low commitment and effort	Low commitment and effort Relatively high academic withdrawal
Academic achievement	High (mostly)	Moderate	High	Relatively low	Low	Low
Self-perceptions	Positive	Moderate	Positive	Moderate	Moderate	Relatively negative
Emotions/affect	High positive affect (enjoyment) Low negative affect (anxiety)	High negative affect (anxiety, frustration)	High positive affect (enjoyment) High negative affect (anxiety,	Moderate negative affect	Low positive affect (enjoyment, enthusiasm) Relatively high	High negative affect (anxiety, boredom) Low interest

	High interest		worry) High interest		negative affect (boredom, distress)	
Academic and general well-being	High engagement High school value Low burnout Low depressive symptoms	Moderate well-being	High engagement High school value High school burnout (exhaustion, inadequacy)	Relatively low engagement and school value Moderate well-being	Moderate well-being Slightly pronounced cynicism	Low engagement Low school value High school burnout (cynicism, inadequacy) Depressive symptoms
Perceptions of and responses to the learning environment	Positive evaluations of course materials and teaching High participation Moderate satisfaction Low preferred emphasis on ability and evaluation	Relatively high preferred emphasis on ability and evaluation	Moderate evaluations of course materials Positive evaluations of teaching High participation Moderate satisfaction High perceived and preferred emphasis on learning, individualistic work and task variety, relatively high preferred emphasis on ability and evaluation	Moderate evaluations of course materials and teaching Moderate participation Moderate satisfaction		Low evaluations of course materials and teaching Low participation Low satisfaction Relatively low perceived emphasis on learning, individualistic work and task variety, low preferred emphasis on individualistic work

Task-related motivation and performance under different conditions	Increase in situational interest during task Maintaining high self-efficacy and affect even in demanding or ego-involving task conditions	High self-handicapping and low self-efficacy in ego-involving condition	Decrease in situational interest during task		Low and stable situational interest Self-handicapping and low self-efficacy in ego-involving condition

Appendix: Summary of studies examining achievement goal orientation profiles.

Studies using median split procedures.

Study	Measures	Domain	Sample, *N*, Country	Method	Number of profiles and their labels
Pintrich & Garcia, 1991	Intrinsic and extrinsic (i.e., mastery and performance) goal orientations (MSLQ; Pintrich et al., 1987)	General	College students[b], *N*=263, USA	Quartile split	9: Intrinsic and extrinsic goal orientations were split into the lowest quartile, middle 50%, and highest quartile and these two three- level categorical variables were crossed resulting in nine cells
Bouffard, Boisvert, Vezeau, & Larouche, 1995	Learning and performance goal orientations (LPOQ; Ames & Archer, 1988; Pintrich & De Groot, 1990; Bouffard et al., 1995)	General, course- specific	College students, *N*=702, Canada	Median split	4: High Learning/High Performance (HLHP); High Learning/Low Performance (HLLP); Low Learning/ High Performance (LLHP); Low Learning/Low Performance (LLLP)
Bouffard, Vezeau, & Bordeleau, 1998	Learning and performance goal orientations (LPOQ; Bouffard et al., 1995)	General, course- specific	Junior (*N*=408), middle (*N*=323), and senior (*N*=341) high school students, Canada	Median split	4: High Learning/High Performance (HLHP); High Learning/Low Performance (HLLP); Low Learning/ High Performance (LLHP); Low Learning/Low Performance (LLLP)
Pintrich, 2000	Mastery and performance goal orientations (Midgley et al., 1998)	Mathematics	8th- and 9th-graders from junior high school, *N*=150, USA	Median split	4: High-mastery/low-performance; High-mastery/high-performance; Low-mastery/high-performance; Low-mastery/low-performance
Haydel & Roeser, 2002	Task mastery, ego approach, and ego avoidance orientations (PALS; Midgley et al., 2000) (and implicit theories of intelligence, self-confidence in science ability)[a]	Science	10th- and 11th-graders from high school, *N*=403, USA	Median split	4: Mastery-oriented (incremental intelligence beliefs and a mastery orientation); Ego-oriented (entity intelligence beliefs, an ego orientation, and high confidence); Helpless (entity intelligence beliefs, an ego orientation, and low confidence); Unclassified
Roeser, Strobel, Quihuis, 2002	Task, ego-approach, and ego-avoidance goal orientations (PALS; Midgley et al., 1995) (and intelligence is fixed, academic mastery efficacy)[a]	Course-specific (social studies and science)	6th-, 7th-, and 8th-graders from middle school, *N*=62, USA	Median split	3: Mastery-oriented; Ego-oriented; Helpless
Shih, 2005	Mastery, performance-approach, and performance-avoidance goals (Elliot & Church, 1997)	General	6th-graders from elementary school, *N*=242, Taiwan	Median split	4: High mastery/low performance-approach; Low mastery/high performance-approach; High/high; Low/low 4: High performance-approach/low performance-avoidance; Low performance-approach/high performance-avoidance; High/high; Low/low
Ng, 2006	Mastery, performance-approach, and work avoidance goals	Course assignment-specific	Adult distance learners, *N*=168, Hong Kong	Median split	4: Mastery-focused learners, performance-focused learners, balanced-goal learners, performance-anxious learners
Lau & Lee, 2008	Mastery and performance-approach goals (Greene et al., 2004) (and perceived instrumentality)[a]	General	8th-graders from secondary schools, *N*=925, Hong Kong	Median split	4: High mastery/high performance-approach; High mastery/low performance-approach; Low mastery/high performance-approach; Low mastery/low performance-approach goal groups
Koul, Clariana, Jitgarun, & Songsriwittaya, 2009	Mastery and performance goal orientations (Niemivirta, 1998)	General	University students, *N*=867, Thailand	Median split	4: High mastery/high performance; High mastery/low performance; Low mastery/high performance; Low mastery/low performance
Sideridis & Kaplan,	Mastery, performance-approach, and	Solving	University students,	Median split	4: Mastery-oriented; Performance approach–oriented; Performance

2011	performance-avoidance goals (Elliot & Church, 1997)	puzzles	*N*=97, Greece	avoidance–oriented; Amotivated

Studies using cluster analysis or model-based techniques.

Study	Measures	Domain	Sample, *N*, Country	Method	Number of profiles and their labels
Meece & Holt, 1993	Task mastery, ego social, and work-avoidant goals (Meece et al., 1988)	Science	5th- and 6th-graders, *N*=257, USA	Cluster analysis	3: High mastery (high on mastery but low on other goals); Combined mastery-ego (high on both mastery and ego, low on work-avoidant goals); Low mastery-ego (low on mastery-ego, but high on work-avoidant goals)
Seifert, 1995	Mastery and performance goal orientations (Seifert, 1995)	General	5th-graders, *N*=79, Canada	Cluster analysis	3: Both mastery and performance oriented; Mastery oriented; Moderately performance oriented but not mastery oriented
Niemivirta, 1998	Learning, performance, and avoidance orientations (Niemivirta, 1998)	General	7th-graders from junior high school, *N*=485, Finland	Cluster analysis	3: Learning-oriented; Performance-oriented; Avoidance-oriented
Turner, Thorpe, & Meyer, 1998	Learning and ability goals (PALS; Midgley & Maehr, 1991) (and negative affect, deep strategy, self-efficacy, action after failure, preference for difficulty)[a]	Mathematics	5th- and 6th-graders from elementary school, *N*=160, USA	Cluster analysis	4: Learning-oriented; Success-oriented; Uncommitted; Avoidant
Bembenutty, 1999	Task, performance-approach, and performance-avoidance goal orientations (PALS; Midgley et al., 1997)	Mathematics	College students, *N*=102, USA	Cluster analysis	3: High mastery; Combined high mastery and high performance-approach; Low mastery, low performance-approach, and low performance-avoidance
Suárez Riveiro, Cabanach, & Valle Arias, 2001	Task, self-enhancing ego, self-defeating ego, and work-avoidance orientations (Skaalvik, 1997)	General	University students, *N*=595, Spain	Cluster analysis	3: High self-enhancing/self-defeating/work-avoidance and medium task goals; High task/self-defeating and medium self-enhancing/work-avoidance goals; High task, medium work-avoidance and low self-enhancing/self-defeating goals
Niemivirta, 2002	Mastery-intrinsic, mastery-extrinsic, performance-approach, performance-avoidance, and work-avoidance orientations (Niemivirta, 2002)	General	9th-graders from junior high school, *N*=143, Finland	Latent class cluster analysis	3: Learning-oriented; Avoidance-oriented; Performance-oriented
Sideridis & Tsorbatzoudis, 2003	Mastery, performance-approach, task avoidance, and positive social experiences (Elliot & Church, 1997; Lethwaite & Piparo, 1993; Ablard & Lipschultz, 1998; Thorkildsen & Nicholls, 1998; Eccles et al., 1983; Wigfield & Guthrie, 1997) (and other cognitive and motivational variables)[a]	Mathematics	5th- and 6th-graders from elementary school, *N*=58, Greece	Cluster analysis	3: Amotivated/Disengaged-Low Achievers; Motivated-High Achievers; Avoidant/Uncommitted-Low Achievers
Valle, Cabanach, Núnez, González- Pienda, Rodríguez, & Piñeiro, 2003	Learning, performance, and social reinforcement goals (Hayamizu & Weiner, 1991)	General	University students, *N*=609, Spain	Cluster analysis	3: Predominance of performance goals (PG); Predominance of multiple goals (MG); Predominance of learning goals (LG)

Veermans & Tapola, 2004	Learning, performance, and avoidance orientations (Niemivirta, 1998)	General	Primary school students followed from 3rd to 6th grade[b], *N*=21, Finland	Cluster analysis	3: Avoidance; Learning; Performance-avoidance
Smith & Sinclair, 2005	Task, performance approach, and performance avoidance goals (PALS; Midgley et al., 1998)	General	Final year high school students, *N*=588, Australia	Cluster analysis	7: Average multi-goal; Approach; Task; Disengaged; Strong multi-goal; Task/approach; Avoid/approach
Brdar, Rijavec, & Loncaric, 2006	Learning, performance, and work-avoidance goal orientations (Niemivirta, 1996, 1998)	General	High school students, *N*=1057, Croatia	Cluster analysis	4: Learning oriented, Work-Avoidance oriented, Performance/Learning oriented, Performance/Work-Avoidance oriented
Fortunato & Goldblatt, 2006	Learning, performance-approach, and performance-avoidance goal orientations (VandeWalle, 1997)	General	Undergraduate students, *N*=311, USA	Cluster analysis	4: Fear-based achievers; Low achievers; Moderate achievers; High achievers
Woodrow, 2006	Task, performance approach, and performance avoid goal orientations (PALS; Midgley et al., 1997) (and language test, integrative, intensity, anxiety in class, anxiety out of class, self-efficacy in class, self-efficacy out of class, cognitive strategies, social strategies, metacognitive strategies)[a]	English	Asian students taking English courses at intensive language centers prior to university entry, *N*=275, Australia	Cluster analysis, profile analysis using multidimensional scaling (PAMS)	2: Adaptive learning; Less adaptive learning
Levy-Tossman, Kaplan, & Assor, 2007	Mastery, performance-approach, and performance-avoidance goals (PALS; Midgley et al., 2000)	General	7th-graders from junior high school, *N*=203, Israel	Cluster analysis	6: Medium-low mastery and performance-approach, low performance-avoidance; Medium mastery, low performance; Medium-low mastery, medium performance; Medium-high mastery, high performance; High mastery, medium performance-approach, medium-low performance-avoidance; High mastery and performance-approach, medium performance-avoidance
Pastor, Barron, Miller, & Davis, 2007	Mastery-approach, performance-approach, performance-avoidance, and mastery-avoidance goals (Elliot & McGregor, 2001)	General, semester-specific	College students, *N*=1868, USA	Latent profile analysis	2-, 3-, and 4-factor conceptualizations were used: 5 profiles were needed to classify students in the 2- and 3-factor conceptualizations and 6 profiles in the 4-factor conceptualization. The majority of students were represented in clusters with moderate to high levels on goal orientations. No profile emerged that was low in mastery-approach, and with one exception in the 4-factor conceptualization, no profile emerged that was high on avoidance measures.
Tanaka, 2007	Learning, achievement, performance-approach, and performance-avoidance orientations (Niemivirta, 1999)	General	9th-graders from junior high school, Japan, *N*=109	Cluster analysis	3: HL-HP (high learning/high performance goal group); HL-LP (high learning/low performance goal group); LL-LP (low learning/low performance goal group)
Daniels, Haynes, Stupnisky, Perry, Newall, & Pekrun, 2008	Mastery and performance-approach goals (MSLQ; Pintrich et al., 1993)	Course-specific (Introductory Psychology)	College students, *N*=1002, Canada	Cluster analysis	4: High mastery/performance (multiple goals); Dominant mastery; Dominant performance; Low mastery/performance (low motivation)
Kolić-Vehovec, Rončević, & Bajšanski, 2008	Mastery, performance, and work-avoidance orientations (Rijavec & Brdar, 2002; Niemivirta, 1998)	General	University students, *N*=352, Croatia	Cluster analysis	4: Mastery; Mastery–performance; Performance–work-avoidance; Work-avoidance
Lau & Roeser, 2008	Task mastery, ego approach, ego avoidance,	Science	High school students,	Inverse factor	4: Boys: Able and confident; Anxious and ego-involved; Intrinsically

	and work avoidance goals (PALS; Midgley et al., 2000) (task values, classroom emotions, test anxiety, competence-beliefs, context beliefs, regulatory processes, cognitive abilities)[a]		*N*=318, USA	analysis	motivated and task-involved; Able but work avoidant 4: Girls: Able; Positive perception of classroom; Confident and task-involved; Anxious and ego-involved
Ng, 2008	Mastery-development, performance-approach (Ames & Archer, 1988; Bouffard et al., 1995; Meece et al., 1988; Young, 1997), work-related, social enhancement, and social affiliation goals[a]	Course-specific	Adult distance learners, *N*=797, Hong Kong	Cluster analysis	4: Mastery-focused learners; Multiple-goal learners with a work focus; Multiple-goal learners with a performance focus; Multiple-goal learners with multiple focuses
Tapola & Niemivirta, 2008	Learning, performance, and avoidance orientations (Niemivirta et al., 2001)	General	6th-graders from elementary school, *N*=208, Finland	Latent class cluster analysis	4: Learning-oriented; Achievement-oriented; Performance-oriented; Avoidance-oriented
Tuominen-Soini, Salmela-Aro, & Niemivirta, 2008	Mastery-intrinsic, mastery-extrinsic, performance-approach, performance-avoidance, and work-avoidance orientations (Niemivirta, 2002)	General	9th-graders from lower secondary school and 2nd-year students from general upper secondary school, *N*=1321, Finland	Latent profile analysis	6: Indifferent; Mastery-oriented; Performance-oriented; Success-oriented; Disengaged; Avoidance-oriented
Cano & Berbén, 2009	Mastery approach, mastery avoidance, performance approach, and performance avoidance goals (Elliot & McGregor, 2001)	Mathematics	University students, *N*=680, Spain	Cluster analysis	4: Low AG, specifically on mastery goals; Low AG but moderately high mastery approach; High AG but low performance approach; High AG, specifically performance approach
Dina & Efklides, 2009	Mastery, performance-approach, and performance-avoidance goal orientations (Midgley et al., 1998) (and math ability, mathematics self-concept, attitude towards mathematics, test anxiety)[a]	Mathematics	7th- and 9th-graders from junior high school, *N*=870, Greece	Cluster analysis	8: High attitude/high self-concept/high mastery/high performance-approach; High ability/high anxiety; High performance/low ability; Low attitude/low self-concept/low mastery; High ability/high attitude/low anxiety/low performance-avoidance; High performance/low ability/high anxiety/low attitude/low self-concept; Low goals/low attitude/low self-concept/ low anxiety; Low anxiety
Liu, Wang, Tan, Ee, & Koh, 2009	Mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals (Elliot & McGregor, 2001)	Project work	Secondary 2 students, *N*=491, Singapore	Cluster analysis	4: Moderately, Highly, Moderately high, Low
Ng, 2009	Mastery, performance-approach, and work-avoidance goals (Ames, 1992; Meece et al., 1988; Young, 1997)	Course assignment-specific (essay)	Adult distance learners, *N*=441, Hong Kong	Cluster analysis	3: Performance-focused; Work-avoidant; Multiple-goal learners
van der Veen & Peetsma, 2009	Mastery and performance-approach orientation (Seegers et al., 2002)	Mathematics	1st-graders from lowest level of secondary school, *N*=735, Netherlands	Cluster analysis	4: Low mastery–low performance-approach; Low mastery–high performance-approach; High mastery–low performance-approach; High mastery–high performance-approach
Luo, Paris, Hogan, & Luo, 2011	Mastery, performance approach, and performance avoidance goals (PALS; (Midgley et al., 1998, 2000)	Mathematics	Secondary 3 students, *N*=1697, Singapore	Latent class cluster analysis	4: Diffuse (moderate multiple); Moderate Mastery (moderate mastery/low performance approach and avoidance); Success Oriented (moderate mastery/high performance approach and avoidance); Approach (high mastery and performance approach/low performance avoidance)
Tuominen-Soini,	Mastery-intrinsic, mastery-extrinsic,	General	9th-graders from lower	Latent profile	4: Indifferent; Success-oriented; Mastery-oriented; Avoidance-oriented

Salmela-Aro, & Niemivirta, 2011	performance-approach, performance-avoidance, and work-avoidance orientations (Niemivirta, 2002)		secondary school[b], *N*=530 and 2nd-year students from general upper secondary school[b], *N*=519, Finland	analysis	
Núñez, González-Pienda, Rodríguez, Valle, Gonzalez-Cabanach, & Rosário, 2011	Learning, performance, and social reinforcement goals[a] (Hayamizu & Weiner, 1991)	General	Primary and secondary school students with LD, *N*=259, Spain	Cluster analysis	4: Profile with predominance of performance and social-reinforcement-seeking goals (PSG); Profile with generalized low motivation (LowM); Multiple goal profile (MG); Profile with predominance of learning goals (LG)
Bembenutty, 2012	Task, performance-approach, and performance-avoidance goal orientations (PALS; Midgley et al., 1997)	General	Preservice teachers enrolled in an educational psychology course at a college, *N*=169, USA	Latent class analysis	4: Moderate mastery, low performance, moderate avoidance; High mastery, low performance, low avoidance; High mastery, low performance, moderate avoidance; High mastery, moderate performance, moderate avoidance
Berger, 2012	Mastery-approach, challenge-mastery, performance-approach, performance-avoidance, and work avoidance goals (Elliot & McGregor, 2001; Grant & Dweck, 2003)	Professional mathematics	Vocational school students, *N*=263, Switzerland	Latent profile analysis	4: Low mastery and challenge-mastery but high work-avoidance; A standard profile with no peak on any goals; High mastery but low performance and work-avoidance goals; High mastery, performance-approach, and performance-avoidance goals
Conley, 2012	Mastery, performance-approach, and performance-avoidance goals (PALS; Midgley et al., 2000) (and task values, competence beliefs)[a]	Mathematics	7th-graders from middle school, *N*=1870, USA	Cluster analysis	7: Low cluster; Average-traditional; Average-high cost; Average-multiple goals; High-low cost; High-high cost; High-all
Jang & Liu, 2012	Mastery approach, performance approach, mastery avoidance, and performance avoidance goals (AGQ; Elliot & McGregor, 2001)	Mathematics	Secondary Two students, *N*=480, Singapore	Cluster analysis	5: High multiple goals; High mastery approach; Low multiple goals; High mastery avoidance: Low performance goals
Koul, Roy, & Lerdpornkulrat, 2012	Mastery, performance approach, and performance avoidance goal orientations (Niemivirta, 1998) (and GPA scores, perceptions of classroom learning environment, and levels of classroom anxiety)[a]	Biology and physics	High school students, *N*=1538, Thailand	Cluster analysis	2: Students with higher GPA scores and high levels of mastery goals; Students with lower GPA scores, high levels of performance approach and performance avoidance goals, and high levels of classroom anxieties
Schwinger & Wild, 2012	Mastery, performance-approach, and performance-avoidance goals (Nicholls et al., 1985; Köller & Baumert, 1998)	Mathematics	Students followed from 3rd to 7th grades[b], *N*=302, Germany	Latent profile analysis	3: High multiple goals; Moderate multiple goals; Primarily mastery-oriented
Tuominen-Soini, Salmela-Aro, & Niemivirta, 2012	Mastery-intrinsic, mastery-extrinsic, performance-approach, performance-avoidance, and work-avoidance orientations (Niemivirta, 2002)	General	9th-graders followed from lower to upper secondary school[b], *N*=579, Finland	Latent profile analysis	4: Indifferent; Success-oriented; Mastery-oriented; Avoidance-oriented
Dela Rosa & Bernardo, 2013	Mastery-approach and performance-approach orientations (Harackiewicz et al., 1997)	Algebra	University students, *N*=900, Philippines	Cluster analysis	4: Predominantly performance-approach; Predominantly mastery-approach; Multiple goals; Low achievement goal
Pulkka & Niemivirta,	Mastery-intrinsic, mastery-extrinsic,	General	1st - and 2nd-year	Latent class	4: Mastery-oriented; Success-oriented; Avoidance-oriented; Indifferent

2013a	performance-approach, performance-avoidance, and work-avoidance orientations (Niemivirta, 2002)		students from the National Defense University[b], *N*=169, Finland	cluster analysis	
Pulkka & Niemivirta, 2013b	Mastery-intrinsic, mastery-extrinsic, performance-approach, performance-avoidance, and work-avoidance orientations (Niemivirta, 2002)	General	1st - and 2nd-year students from the National Defense University, *N*=167, Finland	Latent class cluster analysis	4: Mastery-oriented; Success-oriented; Indifferent; Avoidance-oriented
Shim & Finch, 2014	Mastery, performance-approach, and performance-avoidance goals (PALS; Midgley et al., 2000) (and social development, social demonstration-approach, and social demonstration-avoidance goals)[a] (Ryan & Shim, 2008)	General	Middle school students, *N*=440, USA	Confirmatory factor latent class analysis	6: Class 1 was totally mastery and development goals oriented; Class 2 was mastery oriented in the academic sphere but showed high pursuit of all social goals; Classes 3 and 4 both had moderately high academic achievement goals but class 3 had lower social goals compared to class 4. Class 5 had the lowest achievement goals. Class 6 had low academic achievement goals but relatively high values for social development, approach, and avoidance goals compared to class 5.
Tapola, Jaakkola, & Niemivirta, 2014	Mastery-intrinsic, mastery-extrinsic, performance-approach, performance-avoidance, and work-avoidance orientations (Niemivirta, 2002)	General	4th-, 5th-, and 6th-graders from elementary school, *N*=140, Finland	Latent class cluster analysis	3: Success-oriented; Mastery-oriented; Avoidance-oriented
Dull, Schleifer, & McMillan, 2015	Mastery and performance goals (Duncan & McKeachie, 2005; Pintrich et al., 1993)	Accounting	University students, *N*=521, USA	Cluster analysis	4: Multiple-goal; Mastery; Performance; Low motivation
Flanagan, Putwain, & Caltabiano, 2015	Self-approach, self-avoidance, task-approach, task-avoidance, other-approach, and other-avoidance goals (AGQ; Elliot et al., 2001)	Course-specific	University students, *N*=286, England, Australia, and Singapore	Cluster analysis	4: Very high mastery; High–very high all goals; Moderately high mastery; Very–extremely high all goals
Inglés, Martínez-Monteagudo, García-Fernández, Valle, Núñez, Delgado, & Torregrosa, 2015	Learning, achievement, and social reinforcement goals[a] (Hayamizu & Weiner, 1991)	General	Compulsory secondary education students, *N*=2022, Spain	Cluster analysis	4: High generalized motivation; Low generalized motivation; Predominance of learning and achievement goals; Predominance of social reinforcement goals
Korpershoek, Kuyper, & van der Werf, 2015	Mastery, performance, extrinsic, and social motivation[a] (McInerney & Ali, 2006)	General	9th-graders from secondary school, *N*=7257, Netherlands	Multilevel latent class analysis	6: Above average on all scales; Below average on all scales; Average scores on mastery and social and above average scores on performance and extrinsic; Above average scores on mastery and social; Two clusters with extremely low scores on performance and to a lesser extent on extrinsic
Valle, Núñez, Cabanach, Rodríguez, Rosário, & Inglés, 2015	Learning, performance-approach, and performance-avoidance goals (Skaalvik, 1997)	General	University students, *N*=2556, Spain	Cluster analysis	7: LG (learning goals), LG/P-AvG (learning goals/ performance-avoidance goals), P-AvG (performance-avoidance goals), HM-MG (high motivation by multiple goals), P-ApG/P-AvG (performance-approach goals/performance-avoidance goals), LM (Low Motivation), LG/PApG (learning goals/performance-approach goals)

Valle, Pan, Núñez, Rodríguez, Rosário & Regueiro, 2015	Learning, performance-approach, and performance-avoidance goals (Núñez et al., 2007)	General	4th-, 5th- and 6th-graders from elementary school, *N*=535, Spain	Cluster analysis	3: Low multiple goals; High multiple goals; Predominantly learning goals
Jansen in de Wal, Hornstra, Prins, Peetsma, & Van der Veen, 2016	Mastery approach, performance approach, and performance avoidance orientation (Seegers et al., 2002)	Language and mathematics	5th- and 6th-graders from elementary school[b], *N*=722, Netherlands	Latent profile analysis, latent transition analysis	3: Multiple goals; Approach oriented; Moderate/Indifferent. Similar goal profiles could be discerned at all measurement waves for both language and mathematics.
Peixoto, Monteiro, Mata, Sanches, Pipa, & Almeida, 2016	Task, self-enhancing ego, self-defeating ego, and avoidance orientation (Skaalvik, 1997; Pipa et al., 2016)	General	5th- and 7th-graders, *N*=695, Portugal	Cluster analysis	4: Self-defeating oriented; Self-enhancing oriented; Disengaged; Task oriented
Regueiro, Núñez, Valle, Piñeiro, Rodríguez, & Rosário, 2016	Acquisition, competence and control goals, goals of interest in subjects, performance-avoidance, work-avoidance, performance-approach, social recognition goals, obtaining future work goals, and punishment-avoidance goals (Núñez et al., 2007)[a]	General	High school students, *N*=714, Spain	Latent profile analysis	5: Moderate learning goals; Unmotivated; Failure avoidance; Positive goals; Multiple goals
Schwinger, Steinmayr, & Spinath, 2016	Mastery, performance-approach, and performance-avoidance goals (Spinath et al., 2002)	Mathematics	3rd- and 4th-graders from elementary school[b], *N*=542, Germany	Latent profile analysis	5: High multiple goals; Moderate multiple goals; Primarily mastery-oriented; Moderately performance-oriented; Amotivated (all profiles were not prevalent at each measurement wave)
Wilson, Zheng, Lemoine, Martin, & Tang, 2016	Mastery, performance-approach, and performance-avoidance goals (PALS; Midgley et al., 2000)	General	3rd-graders from elementary school, *N*=195, USA	Cluster analysis	4: Mastery; Multi-goal; Avoidant; Low motivation
Zhang, Watermann, & Daniel, 2016	Mastery, performance-approach, and performance-avoidance goals (Midgley et al., 2000; Köller & Baumert, 1998; Schwinger & Wild, 2006	General	4th-graders from elementary school, *N*=4387, Germany	Latent class analysis	3: Mastery-oriented; High multiple; Low mastery
Zhou, 2016	Mastery-approach, performance-approach, performance-avoidance, and mastery-avoidance goals (Elliot & Murayama, 2008)	Task-specific	University students, *N*=105, China	Cluster analysis	3: Mastery-approach-focused; Approach-oriented; Avoidance-oriented
Gonçalves, Niemivirta, & Lemos, 2017	Mastery, performance-approach self-presentation, performance- approach competitive, and performance-avoidance goals (PALS; Midgley et al., 2000) and social responsibility, prosocial friendship oriented, and prosocial learning oriented goals (Wentzel, 1993)[a]	General	9th-graders from basic education and 10th-graders from secondary school[b], *N*=386, Portugal	Latent class cluster analysis	6: Overall moderate; Disaffected; Performance oriented; Mastery-social oriented; Overall high non-competitive; Performance-mastery oriented
Lee, Wormington,	Mastery-approach, performance- approach,	Anatomy	University students[b],	Latent profile	3: Very-low performance; Low performance; Moderate performance (all

Linnenbrink-Garcia, & Roseth, 2017	and performance-avoidance goals (PALS; Midgley et al., 2000)		*N*=121, USA	analysis	profiles had similarly high levels of mastery)
Litalien, Morin, & McInerney, 2017	Task, effort, competition, social power, affiliation, social concerns, praise, and token reward goals (ISM; McInerney & Ali, 2006)[a]	General	High school students, *N*=7848, Hong Kong	Latent profile analysis	5: Mastery-competition oriented; Moderately motivated; Mastery-socially oriented; Social power and rewards oriented; Mastery oriented (Males)/Moderately unmotivated (Females)
Tuominen, Niemivirta, Lonka, & Salmela-Aro, 2017	Mastery-intrinsic, mastery-extrinsic, performance-approach, performance-avoidance, and work-avoidance orientations (Niemivirta, 2002)	General	6th-graders from elementary school and 7th-graders from lower secondary school[b], *N*=419, Finland	Latent profile analysis, latent transition analysis	4: Indifferent; Success-oriented; Mastery-oriented; Avoidance-oriented

Note. This summary comprises altogether 71 studies in peer-reviewed, English-language journals that meet the criteria of clustering students on the basis of achievement goals or goal orientations and follow a person-oriented approach with corresponding methods. Studies within the field of sports psychology are excluded from this summary. A search was conducted using various databases (e.g., PsycINFO, ERIC, Scopus) for the years 1990–2017. References that were published in a scholarly journal and that described an empirical study were selected. The reference lists for all relevant articles were examined to locate additional studies. Also, a manual search for articles from key authors in the field was conducted.

[a] Also other variables were used for classification in addition to achievement goals or goal orientations.
[b] The study includes longitudinal analysis of achievement goal orientation profiles.

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